

Trend Study 18-3-02

Study site name: Manning Canyon.

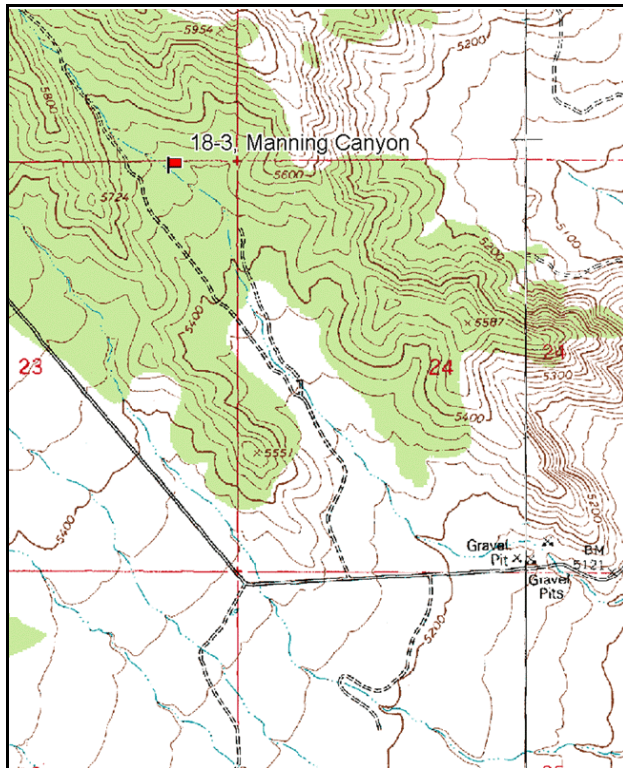
Vegetation type: Pinyon-Juniper.

Compass bearing: frequency baseline 187 degrees magnetic (Line 2-4 @113°M).

Frequency belt placement: line 1 (11 & 95ft), line 2 (59ft), line 3 (34ft), line 4 (71ft).

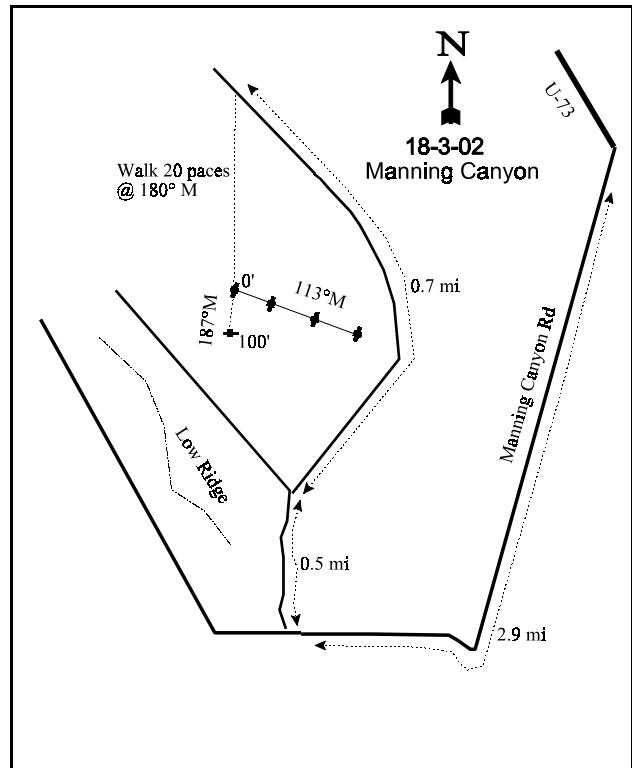
LOCATION DESCRIPTION

From the junction of Highway U-73 and the Manning Canyon road, between Cedar Fort and Fairfield, travel west on the Manning Canyon road for 2.9 miles. Turn north (right) on a dirt road and travel 0.5 mile to a fork. Take the right fork (east) and travel an additional 0.7 mile. Walk south on an azimuth of 180 degrees magnetic for 26 paces to the 0-foot mark of the frequency baseline, marked by a short fencepost with a red browse tag, number 3985.



Map Name: Mercur

Township 6S , Range 3W , Section 14



Diagrammatic Sketch

GPS: NAD 27, UTM 12S 44604 09 N 402957 E

DISCUSSION

Manning Canyon - Trend Study No. 18-3

The Manning Canyon study is within the critical winter range at the extreme south end of the Oquirrh Mountains. It is located within a small valley surrounded with juniper covered hills. This area is managed by the BLM. The site is nearly level with an elevation of 5,500 feet. The range type is essentially a pinyon/juniper/big sagebrush/grass ecotone. Deer use of the area appears to have been heavy in the past but current use is more moderate. A pellet group transect read on site in 2002 estimated 31 deer days use/acre (78 ddu/ha). Only one elk pellet group was encountered. Rabbit pellets were extremely abundant and had a high quadrat frequency value of 45% in 2002. During past readings, there has been domestic sheep and cattle use noted. Juniper trees on and around the site provide excellent thermal cover for wintering big game. Pinyon-juniper density is low on the site itself with point-quarter data estimating about 35 juniper and 8 pinyon trees/acre in 1997 and 2002. Juniper trees are large mature individuals averaging 10 inches in diameter in 2002.

The study is on an alluvial flood plain with soils that are gravelly to cobbly. There appears to be no strong development of distinct horizons. Soil at the site has a clay loam texture with a moderately alkaline reaction (pH of 7.9). Effective rooting depth is estimated at over 14 inches with a soil temperature of nearly 50° F at 17 inches in depth. Phosphorus is moderately low at 7.7 ppm. Values below 10 ppm can be a limiting factor to plant growth and development. Ground cover is fair and erosion is minimal due to the gentle terrain. The soil erosion condition classification was determined as stable in 2002. Some sedimentation is apparent and a number of small drainage channels traverse the area. The area is subject to flood damage from high intensity storms and runoff from higher up the slope.

The principal preferred browse is Wyoming big sagebrush which made up about 60% of the browse cover in 1997 and 2002. There appears to be some hybridizing occurring between Wyoming big sagebrush (*Artemisia tridentata wyomingensis*) and basin big sagebrush (*Artemisia tridentata tridentata*). Some plants have more upright growth forms characteristic of basin big sagebrush, while there is greater utilization occurring on shrubs which have more characteristics of Wyoming big sagebrush. For this report, all sagebrush are classified as Wyoming big sagebrush. In 1983, the population was comprised of a moderately dense stand of heavily hedged plants where 92% of the plants were classified as heavily utilized. Vigor was fair, but excessive decadence by 1990 was a cause of concern (88%). Density of sagebrush was estimated at about 2,100 plants/acre in 1997 and 2002. Utilization has been mostly light to moderate since 1983 with a few plants being heavily hedged. Vigor was poor on 25% of the sagebrush sampled in 2002 and the number of decadent plants increased to 46%. Dead plants first sampled in 1997 are abundant and provide evidence that a large proportion of the population has died off in the past.

Other browse species on the site include green ephedra, Stansbury cliffrose, pricklypear cactus, Utah juniper, stickyleaf low rabbitbrush, white rubber rabbitbrush, and black sagebrush. With the exception of heavy use on cliffrose, moderate use on low rabbitbrush and black sagebrush, the remainder of the browse species are only lightly utilized. Some of the sagebrush and low rabbitbrush use is from rabbits which are abundant on the site. There are also an occasional fourwing saltbush and grey horsebrush.

Grasses, especially annuals, are one of the principal understory components. Cheatgrass brome, in places, is capable of carrying a fire. Perennial grasses are all bunchgrasses, and show evidence of considerable past grazing use. Principal species include bluebunch wheatgrass, Indian ricegrass, and needle-and-thread. These grasses tend to be large, slightly pedestalled, and unevenly distributed. Fairly good quantities of bare ground and pavement separates the grasses and shrubs.

Forbs, especially succulent species, are lacking. Several increasers such as rock goldenrod, are indicative of past heavy grazing use. Annual forbs are common but only pale alyssum is abundant.

1983 APPARENT TREND ASSESSMENT

Soil condition is fair. The area is potentially highly erodible. Only the gentle slope prevents serious soil movement. There is a moderate to high fire hazard related primarily to growth and abundance of cheatgrass and pale alyssum. The key browse species, Wyoming big sagebrush, appears to be declining. Increaser shrubs and forbs appear to be expanding. A slowly thickening juniper stand may cause downward trends for browse and herbaceous plants in the future.

1990 TREND ASSESSMENT

The Wyoming big sagebrush component continues to show signs of serious decline as evidenced by the sharp increase in percent decadence from 25% to 88%. Density has changed little. Sagebrush canopy cover is highly variable, but averages about 4%. The sagebrush are generally moderately hedged, 56% were classified as such. All age classes of juniper are present on the site and appear to be increasing. Point-center quarter data provides estimates of 65 juniper and 10 pinyon/acre. Bluebunch wheatgrass is common on the better soils at the site. Large bare interspaces remain and these are becoming increasingly covered by erosion pavement. However, percent bare soil has decreased from 26% to 16% and vegetative basal cover has increased.

TREND ASSESSMENT

soil - up slightly (4)

browse - slightly down for the key species, Wyoming big sagebrush (2)

herbaceous understory - stable (3)

1997 TREND ASSESSMENT

The trend for soil is still slightly improving with further decreases in percent bare soil. In addition, herbaceous plants provide 68% of the total vegetation cover. Herbaceous cover is more protective of the soils than aerial cover from shrubs and trees. Trend for browse is starting to show signs of improving, but 42% of the plants are classified as dead. Percent decadence has decreased from the high of 88% in 1990 to only 31% currently and vigor has improved. Percent decadence is still relatively high, even for a dry Wyoming big sagebrush community. At this time, 61% of the browse cover is contributed by Wyoming big sagebrush. The herbaceous understory shows a slight improvement, mostly by bluebunch wheatgrass. Annuals still contribute much to the composition with two annuals, cheatgrass and pale alyssum, contributing almost 40% of the herbaceous understory cover. Fire is a real threat to this community with the high amount of fine fuels provided by the annuals.

TREND ASSESSMENT

soil - slightly improved (4)

browse - slightly improving for Wyoming big sagebrush (4)

herbaceous understory - slightly improved, but poor composition (4)

2002 TREND ASSESSMENT

Trend for soil is stable with similar ground cover characteristics compared to 1997. There are some signs of past erosion but the soil erosion condition class was determined to be stable in 2002. Trend for browse is down slightly for the key species, Wyoming big sagebrush. Utilization continues to be mostly light to moderate. Density has remained similar to 1997 estimates but recruitment remains poor and the number of decadent plants has increased to nearly half of the population (46%). In addition, 51% of the decadent sagebrush sampled were classified as dying (480 plants/acre) and young recruitment is not currently adequate to maintain the stand. A return to normal precipitation will most likely reverse this trend but a continuation of drought conditions will cause further population declines. Trend for the herbaceous understory is stable. Sum of nested frequency for perennial grasses increased slightly while frequency of forbs declined slightly. Bluebunch wheatgrass remains the most abundant species. Cheatgrass declined slightly in frequency and cover. The forb composition remains poor with only rock goldenrod and the annual, pale alyssum, being common.

TREND ASSESSMENT

soil - stable (3)

browse - slightly down (2)

herbaceous understory - stable (3)

HERBACEOUS TRENDS --

Herd unit 18 , Study no: 3

Type	Species	Nested Frequency				Quadrat Frequency				Average Cover %	
		'83	'90	'97	'02	'83	'90	'97	'02	'97	'02
G	Agropyron smithii	-	-	-	6	-	-	-	2	-	.03
G	Agropyron spicatum	_a 110	_{ab} 133	_b 162	_{ab} 151	40	54	52	56	9.96	6.05
G	Bromus japonicus (a)	-	-	-	2	-	-	-	1	-	.00
G	Bromus tectorum (a)	-	-	282	251	-	-	84	78	6.69	4.89
G	Oryzopsis hymenoides	_b 77	_{ab} 64	_a 41	_a 45	38	29	20	17	1.82	1.13
G	Poa bulbosa	-	-	-	2	-	-	-	1	-	.03
G	Poa secunda	_a 1	_{ab} 15	_b 39	_c 75	1	7	15	29	.28	.80
G	Sitanion hystrix	_c 89	_b 55	_b 33	_a 3	47	25	17	1	.53	.15
G	Stipa comata	_a 11	_c 29	_{bc} 54	_c 64	5	13	21	25	2.65	3.56
Total for Annual Grasses		0	0	282	253	0	0	84	79	6.69	4.89
Total for Perennial Grasses		288	296	329	346	131	128	125	131	15.26	11.77
Total for Grasses		288	296	611	599	131	128	209	210	21.96	16.67
F	Agoseris glauca	-	-	-	4	-	-	-	2	-	.01
F	Alyssum alyssoides (a)	-	-	_b 315	_a 244	-	-	95	80	3.25	1.31
F	Astragalus spp.	6	-	1	-	2	-	1	-	.03	-
F	Castilleja linariaefolia	-	-	7	2	-	-	3	1	.06	.03
F	Calochortus nuttallii	_b 17	_a -	_b 15	_b 10	11	-	8	6	.04	.03
F	Castilleja spp.	-	-	4	-	-	-	2	-	.01	-
F	Cirsium spp.	-	-	1	-	-	-	1	-	.00	-
F	Descurainia pinnata (a)	-	-	3	-	-	-	1	-	.03	-
F	Erodium cicutarium (a)	-	-	3	9	-	-	1	3	.00	.01
F	Eriogonum umbellatum	-	-	4	10	-	-	2	3	.01	.01

T y p e	Species	Nested Frequency				Quadrat Frequency				Average Cover %	
		'83	'90	'97	'02	'83	'90	'97	'02	'97	'02
F	Gilia spp. (a)	-	-	3	4	-	-	1	2	.00	.01
F	Lathyrus brachycalyx	3	-	4	7	1	-	2	3	.06	.31
F	Lactuca serriola	-	-	-	-	-	-	-	-	.00	-
F	Petradoria pumila	23	37	22	25	10	16	7	10	.94	.54
F	Phlox hoodii	-	-	4	-	-	-	1	-	.00	-
F	Phlox longifolia	2	-	-	3	1	-	-	1	-	.00
F	Ranunculus testiculatus (a)	-	-	_a 3	_b 26	-	-	1	11	.00	.08
F	Sphaeralcea coccinea	20	21	24	9	9	8	12	6	.28	.06
F	Streptanthus cordatus	9	-	6	4	4	-	3	2	.16	.03
F	Vicia americana	-	2	3	-	-	1	1	-	.15	-
Total for Annual Forbs		0	0	327	283	0	0	99	96	3.31	1.42
Total for Perennial Forbs		80	60	95	74	38	25	43	34	1.76	1.03
Total for Forbs		80	60	422	357	38	25	142	130	5.07	2.46

Values with different subscript letters are significantly different at alpha = 0.10

BROWSE TRENDS --

Herd unit 18 , Study no: 3

T y p e	Species	Strip Frequency		Average Cover %	
		'97	'02	'97	'02
B	Artemisia tridentata wyomingensis	61	62	7.70	7.89
B	Chrysothamnus viscidiflorus viscidiflorus	11	13	.48	.09
B	Ephedra viridis	1	2	.85	.98
B	Gutierrezia sarothrae	7	11	.19	.03
B	Juniperus osteosperma	1	1	3.34	3.65
B	Opuntia spp.	2	6	-	-
B	Pinus monophylla	0	0	-	.63
Total for Browse		83	95	12.57	13.28

CANOPY COVER --

Herd unit 18 , Study no: 3

Species	Percent Cover	
	'97	'02
Juniperus osteosperma	3.6	5

Key Browse Annual Leader Growth

Herd unit 18 , Study no: 3

Species	Average leader growth (in) '02
Artemisia tridentata vaseyana	2.3

Point-Quarter Tree Data

Herd unit 18 , Study no: 3

Species	Trees per Acre		Average diameter (in)	
	'97	'02	'97	'02
Juniperus osteosperma	34	37	8.0	10.1
Pinus monophylla	7	13	3.2	4.3

BASIC COVER --

Herd unit 18 , Study no: 3

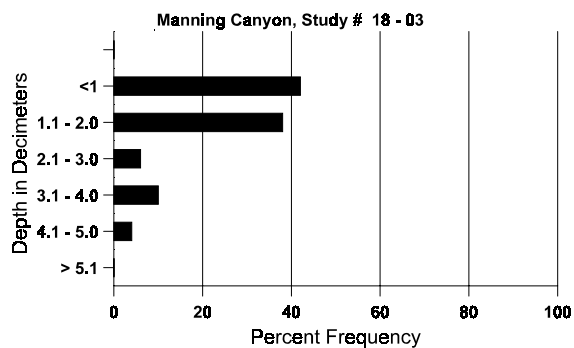
Cover Type	Nested Frequency		Average Cover %			
	'97	'02	'83	'90	'97	'02
Vegetation	376	358	1.50	5.25	38.40	36.87
Rock	159	196	5.25	7.25	6.62	9.95
Pavement	251	277	4.25	25.75	13.51	7.94
Litter	380	378	59.25	41.00	39.88	35.18
Cryptogams	170	293	4.00	4.75	4.61	21.70
Bare Ground	195	190	25.75	16.00	8.93	7.19

SOIL ANALYSIS DATA --

Herd Unit 18, Study no: 3, Manning Canyon

Effective rooting depth (in)	Temp °F (depth)	pH	%sand	%silt	%clay	%OM	PPM P	PPM K	dS/m
14.3	48.8 (16.8)	7.9	40.3	33.2	26.6	2.6	7.7	124.8	0.5

Stoniness Index



PELLET GROUP FREQUENCY --

Herd unit 18 , Study no: 3

Type	Quadrat Frequency		Pellet Transect	
	'97	'02	Pellet Groups per Acre 02	Days Use per Acre (ha) 02
Rabbit	10	45	-	-
Elk	2	-	9	1 (2)
Deer	52	21	409	31 (78)

BROWSE CHARACTERISTICS --

Herd unit 18 , Study no: 3

A Y G R E	Form Class (No. of Plants)	Vigor Class								Plants Per Acre	Average (inches) Ht. Cr.		Total					
		1	2	3	4	5	6	7	8		9	1		2	3	4		
Artemisia nova																		
M	83	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0	
	90	-	1	-	-	-	-	-	-	-	1	-	-	-	33	8	10	1
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0	12	15	0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
% Plants Showing		<u>Moderate Use</u>				<u>Heavy Use</u>				<u>Poor Vigor</u>				<u>%Change</u>				
'83		00%				00%				00%								
'90		100%				00%				00%								
'97		00%				00%				00%								
'02		00%				00%				00%								
Total Plants/Acre (excluding Dead & Seedlings)										'83		0	Dec:					
										'90		33						
										'97		0						
										'02		0						

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total		
		1	2	3	4	5	6	7	8	9	1	2	3	4						
Artemisia tridentata wyomingensis																				
S	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0			
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0			
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0			
	02	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1			
Y	83	3	1	-	-	-	-	-	-	-	4	-	-	-	133		4			
	90	1	-	-	-	-	-	-	-	-	1	-	-	-	33		1			
	97	2	-	-	-	-	-	-	-	-	2	-	-	-	40		2			
	02	3	-	-	-	-	-	-	-	-	3	-	-	-	60		3			
M	83	-	-	32	-	-	-	-	-	-	32	-	-	-	1066	13 18	32			
	90	1	2	-	-	1	-	-	-	-	4	-	-	-	133	14 16	4			
	97	59	4	4	1	4	-	-	-	-	72	-	-	-	1440	31 43	72			
	02	32	18	2	-	-	-	-	-	-	50	1	1	-	1040	21 31	52			
D	83	-	-	12	-	-	-	-	-	-	2	-	10	-	400		12			
	90	15	21	1	1	-	-	-	-	-	26	-	7	5	1266		38			
	97	22	4	-	1	6	1	-	-	-	21	-	-	13	680		34			
	02	26	14	2	2	-	2	1	-	-	23	-	-	24	940		47			
X	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0			
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0			
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	1580		79			
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	1380		69			
% Plants Showing		Moderate Use			Heavy Use			Poor Vigor			%Change									
		'83			02%			92%			21%			-10%						
		'90			56%			02%			28%			+34%						
		'97			17%			05%			12%			- 6%						
		'02			31%			06%			25%									
Total Plants/Acre (excluding Dead & Seedlings)												'83	1599	Dec:	25%					
												'90	1432		88%					
												'97	2160		31%					
												'02	2040		46%					

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Chrysothamnus viscidiflorus viscidiflorus																		
S	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	97	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1	
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
Y	83	5	-	-	-	-	-	-	-	-	5	-	-	-	166		5	
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	97	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1	
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
M	83	6	-	-	-	-	-	-	-	-	6	-	-	-	200	12	16	
	90	-	1	-	-	-	-	-	-	-	1	-	-	-	33	5	4	
	97	15	-	-	-	-	-	-	-	-	15	-	-	-	300	11	12	
	02	7	2	-	-	-	-	-	-	-	9	-	-	-	180	8	11	
D	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	90	1	-	-	-	-	-	-	-	-	-	-	-	1	33		1	
	97	-	-	-	-	-	1	-	-	-	-	-	-	1	20		1	
	02	4	3	-	-	-	-	-	-	-	4	-	1	2	140		7	
X	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	60		3	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'83		00%			00%			00%			-82%							
'90		50%			00%			50%			+81%							
'97		00%			06%			06%			- 6%							
'02		31%			00%			19%										
Total Plants/Acre (excluding Dead & Seedlings)												'83	366	Dec:	0%			
												'90	66		50%			
												'97	340		6%			
												'02	320		44%			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Cowania mexicana stansburiana																		
S	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	90	-	-	-	-	-	-	1	-	-	-	-	-	-	33		1	
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
Y	83	-	1	-	-	-	-	-	-	-	1	-	-	-	33		1	
	90	-	-	2	-	-	-	-	-	-	2	-	-	-	66		2	
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
M	83	-	-	1	-	-	-	-	-	-	1	-	-	-	33	33 28	1	
	90	-	-	1	-	-	-	-	-	-	1	-	-	-	33	35 26	1	
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0	- -	0	
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0	- -	0	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'83		50%			50%			00%			+33%							
'90		00%			100%			00%										
'97		00%			00%			00%										
'02		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'83	66	Dec:	-			
												'90	99		-			
												'97	0		-			
												'02	0		-			
Ephedra viridis																		
Y	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	90	1	-	-	-	-	-	-	-	-	1	-	-	-	33		1	
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
M	83	-	6	-	-	-	-	-	-	-	5	-	-	1	200	39 39	6	
	90	1	-	-	1	-	-	-	-	-	2	-	-	-	66	40 39	2	
	97	1	-	-	-	-	-	-	-	-	1	-	-	-	20	41 53	1	
	02	-	-	-	1	-	-	-	-	-	1	-	-	-	20	46 66	1	
D	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	90	4	-	-	-	-	-	-	-	-	3	-	1	-	133		4	
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	02	-	-	1	-	-	-	-	-	-	1	-	-	-	20		1	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'83		100%			00%			17%			+14%							
'90		00%			00%			14%			-91%							
'97		00%			00%			00%			+50%							
'02		00%			50%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'83	200	Dec:	0%			
												'90	232		57%			
												'97	20		0%			
												'02	40		50%			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Gutierrezia sarothrae																		
Y	83	5	-	-	-	-	-	-	-	-	5	-	-	-	166		5	
	90	6	-	-	-	-	-	-	-	-	6	-	-	-	200		6	
	97	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1	
	02	2	-	-	-	-	-	-	-	-	2	-	-	-	40		2	
M	83	7	-	-	-	-	-	-	-	-	7	-	-	-	233	9	7	
	90	21	-	-	1	-	-	-	-	-	21	-	1	-	733	5	6	
	97	7	-	-	-	-	-	-	-	-	7	-	-	-	140	10	10	
	02	10	-	-	-	-	-	-	-	-	10	-	-	-	200	5	7	
D	83	1	-	-	-	-	-	-	-	-	1	-	-	-	33		1	
	90	3	-	-	-	-	-	-	-	-	3	-	-	-	100		3	
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	02	7	-	-	-	-	-	-	-	-	2	-	-	5	140		7	
X	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	20		1	
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	40		2	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'83		00%			00%			00%			+58%							
'90		00%			00%			03%			-85%							
'97		00%			00%			00%			+58%							
'02		00%			00%			26%										
Total Plants/Acre (excluding Dead & Seedlings)												'83	432	Dec:	8%			
												'90	1033		10%			
												'97	160		0%			
												'02	380		37%			
Juniperus osteosperma																		
Y	83	2	-	-	-	-	-	-	-	-	2	-	-	-	66		2	
	90	1	-	-	-	-	-	-	-	-	1	-	-	-	33		1	
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
M	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	
	90	1	-	-	-	-	-	-	-	-	1	-	-	-	33	91	69	
	97	1	-	-	-	-	-	-	-	-	1	-	-	-	20	-	-	
	02	1	-	-	-	-	-	-	-	-	-	-	-	-	20	-	-	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'83		00%			00%			00%			+ 0%							
'90		00%			00%			00%			-70%							
'97		00%			00%			00%			+ 0%							
'02		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'83	66	Dec:	-			
												'90	66		-			
												'97	20		-			
												'02	20		-			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Opuntia spp.																		
S	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	90	-	-	-	1	-	-	-	-	-	-	-	1	-	33		1	
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
Y	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	90	1	-	-	-	-	-	-	-	-	-	1	-	-	33		1	
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
M	83	2	-	-	-	-	-	-	-	-	-	2	-	-	66	7	5	2
	90	4	-	-	-	-	-	-	-	-	-	4	-	-	133	6	7	4
	97	4	-	-	-	-	-	-	-	-	-	4	-	-	80	8	14	4
	02	6	-	-	-	-	-	-	-	-	-	6	-	-	120	5	13	6
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'83		00%			00%			00%			+60%							
'90		00%			00%			00%			-52%							
'97		00%			00%			00%			+33%							
'02		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'83	66	Dec:	-			
												'90	166		-			
												'97	80		-			
												'02	120		-			